**ABSTRACT**

In this new era of electronics, we know the concept of e-learning which does not include the use of paper and pen. There are many advantages of e-learning system. In this e-learning system we can assign projects to students and can share documents and more easily. This system has three modules including student, faculties and Admin. Students can login, they have access to main menu, calendar, projects, documentation, to upload, view the things uploaded by the faculties, knowledge books, also send messages to faculties. Faculties can login and have access for viewing, uploading documents and projects. Admin can login and manage the faculties and student details and also view projects. This is how the new concept of e-learning came into existence, which is an easier and smarter system for colleges.

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**CHAPTER 1**

**INTRODUCTION**

**CHAPTER - 1**

**1. INTRODUCTION**

This project is concerned with the analysis, design, development, implementation and evaluation of an e-learning management system to provide a user-friendly environment for prospective students to acquire knowledge at any educational level and to bridge the gap between teachers and students.

The web has become a public square, a library, a doctor’s office, a shop, a school, a design studio, an office, a cinema, a bank, and so much. The web has become something else in this generation where everything can be easily found on the web. This E – Learning project is developed by keeping this in mind that every student can learn the concept by using this application. Where the student needs to get into this web application and download the appropriate documents. This project makes a bridge between students and teachers where teachers can easily upload the documents in this web application. E – learning project is built to keep the online learning simple as possible with great user interface and easy understandable interface.

E – Learning web application has many features comparing with the traditional learning. In this generation, the world is suffering from the COVID-19 we are facing many lockdowns and problems when it comes to education because the college and schools are closed. The students are just waiting the time, the online teaching mode is in practice but it has some drawbacks. With online mode teacher can connect with the student. So, students are losing the interest in the online teaching.

E – Learning web application is proposed to make the online teaching simple as possible where the students can download the documents where are prepared by the teachers and uploaded into this application. The students simply download the documents and refer by themselves.

With the help of this project many students may find the learning easy and helps themselves by not losing interest in the online classes or teaching. E – learning web application provides very simple graphics and interface that can make the user very simple to understand this application for navigation into this application. If this UI is very simple, the user finds more easy navigation into the application.

E – learning is built with new technologies which makes this web application more efficient and more featured one. Because of the new technologies the application has more advantages compare to the web application which are developed with old technologies.

E – learning project has some active user’s admin, student and teachers. The roles of the active users are admin the whole access is granted who can control the application. Admin can see the details of all students and details of all teachers and details of the documents which are stored by the teachers. Where the students can only login into this application can download the documents which are uploaded by the teachers. Teachers can only login in this application and see the all the documents which are uploaded by the other teachers if the teacher wants to download the document which is uploaded by another teacher, can download the document.

So, E – learning provides the advantage by providing the feature of uploading of document as same as for students to download the documents which are uploaded by the teachers.

**1.2 OBJECTIVE OF THE PROJECT**

This application is developed to provide best learning services to the students and teachers as well. We have developed this system to provide a search platform where a user can find the documents which are important for learning prospective according to the choices of all the documents. We developed this system to create and promote forms of online learning that is electronic learning that provide healthy interaction opportunities of students and teachers through online for better understanding of different types of documents availability. Students can also get the information of documents by seeing the rows of documents which are uploaded by different teachers in this application. This application keeps the basic information of every user registered in this application. They are students and teachers.

E – Learning application includes the uploading, downloading of the documents where the students can download the documents from this application and the teachers can upload the documents into it, admin can see the documents, delete the students and teachers from this application.

**1.3 SCOPE OF THE PROJECT**

* This system provides assurance of proper accuracy and effectiveness thereby improving the related services of this application
* This system provides better management by providing desired flexibility, fast responsibility to support changes and ability to maintain quality services.
* This system has sensitive information of the students and teachers as well as the documents which are stored into the database, we have tried to provide maximum security.
* We are going to develop the proposed system with an objective to eliminate the running cost by overcoming the continuous stationary expenses, manual storage need, and extra staff in the information resource department of the organization.
* We have tried to develop this system keeping in mind the user of the system so there is not much need of a trained professional to use this system.

**1.5 AIM OF THE PROJECT**

E – Learning web application is an integrated application for sharing the documents or resources over the internet that is online. The main aim of this project is to help the students to manage their documents and learning resources. It makes all operation of the learning easy and accurate. The web platform makes the accessing of this application easy by handling requests of the students for the documents. This application provides database for the students and teacher to store the basic information and storing the documents in a separate folder. Different modules have been incorporated in this project to handle different parts and sectors on this e learning concepts.

**CHAPTER - 2**

**LITERATURE SURVEY**

**CHAPTER – 2**

**LITERATURE SURVEY**

**2.1 Language used**

**2.1.1 Python**

**Python** is a general-purpose interpreted, interactive, object-oriented, and high-level programming language. It was created by Guido van Rossum during 1985- 1990. Like Perl, Python source code is also available under the GNU General Public License (GPL).

**Python** is a high-level, interpreted, interactive and object-oriented scripting language. Python is designed to be highly readable. It uses English keywords frequently where as other languages use punctuation, and it has fewer syntactical constructions than other languages.

**Python** is a must for students and working professionals to become a great Software Engineer specially when they are working in Web Development Domain. I will list down some of the key advantages of learning Python:

* **Python is Interpreted** − Python is processed at runtime by the interpreter. You do not need to compile your program before executing it. This is similar to PERL and PHP.
* **Python is Interactive** − You can actually sit at a Python prompt and interact with the interpreter directly to write your programs.
* **Python is Object-Oriented** − Python supports Object-Oriented style or technique of programming that encapsulates code within objects.
* **Python is a Beginner's Language** − Python is a great language for the beginner-level programmers and supports the development of a wide range of applications from simple text processing to WWW browsers to games.

**Characteristics of Python**

Following are important characteristics of **Python Programming** −

* It supports functional and structured programming methods as well as OOP.
* It can be used as a scripting language or can be compiled to byte-code for building large applications.
* It provides very high-level dynamic data types and supports dynamic type checking.
* It supports automatic garbage collection.
* It can be easily integrated with C, C++, COM, ActiveX, CORBA, and Java.

**2.1.2 HTML5**

HTML stands for Hyper Text Markup Language. It is used to design web pages using markup language. HTML is the combination of Hypertext and Markup language. Hypertext defines the link between the web pages. Markup language is used to define the text document within tag which defines the structure of web pages. HTML 5 is the fifth and current version of HTML. It has improved the markup available for documents and has introduced application programming interfaces (API) and Document Object Model (DOM).

**Features:**

* It has introduced new multimedia features which supports audio and video controls by using <audio> and <video> tags.
* There are new graphics elements including vector graphics and tags.
* Enrich semantic content by including <header> <footer>, <article>, <section> and <figure> are added.
* Drag and Drop- The user can grab an object and drag it further dropping it on a new location.
* Geo-location services- It helps to locate the geographical location of a client.
* Web storage facility which provides web application methods to store data on web browser.
* Uses SQL database to store data offline.
* Allows to draw various shapes like triangle, rectangle, circle, etc.
* Capable of handling incorrect syntax.
* Easy DOCTYPE declaration i.e. <!doctype html>
* Easy character encoding i.e. <meta charset=”UTF-8″>

**2.1.3 CSS3**

Cascading Style Sheets, fondly referred to as CSS, is a simply designed language intended to simplify the process of making web pages presentable. CSS allows you to apply styles to web pages. More importantly, CSS enables you to do this independent of the HTML that makes up each web page. CSS is easy to learn and understood, but it provides powerful control over the presentation of an HTML document.

* CSS saves time: You can write CSS once and reuse the same sheet in multiple HTML pages.
* Easy Maintenance: To make a global change simply change the style, and all elements in all the webpages will be updated automatically.
* Search Engines: CSS is considered a clean coding technique, which means search engines won’t have to struggle to “read” its content.
* Superior styles to HTML: CSS has a much wider array of attributes than HTML, so you can give a far better look to your HTML page in comparison to HTML attributes.
* Offline Browsing: CSS can store web applications locally with the help of an offline cache. Using this we can view offline websites.

**2.2 FRAMEWORK**

**2.2.1 Bootstrap**

It is an open-source and free CSS framework, which helps in directing a responsive device-friendly mobile-first front-end web page development tool. Bootstrap includes the CSS (Cascading Style Sheets), and an optional JavaScript supported design template (plug-ins) that deals with typography, implementation of buttons, forms, and various other components user interface. This framework helps in faster web development and supports developers in creating responsive web pages faster.

Bootstrap is a free and open-source tool collection for creating responsive websites and web applications. It is the most popular HTML, CSS, and JavaScript framework for developing responsive, mobile-first websites. It solves many problems which we had once, one of which is the cross-browser compatibility issue. Nowadays, the websites are perfect for all the browsers (IE, Firefox, and Chrome) and for all sizes of screens (Desktop, Tablets, Phablets, and Phones). All thanks to Bootstrap developers -Mark Otto and Jacob Thornton of Twitter, though it was later declared to be an open-source project.

* Faster and Easier Web Development.
* It creates Platform-independent web pages.
* It creates Responsive Web-pages.
* It designed to be responsive to mobile devices too.
* It is Free! Available on www.getbootstrap.com
* It produces less cross-browser bugs.
* It is a consistent framework supported by all the browsers plus CSS based compatibility fixes.
* It is a lightweight and hence widely used framework for creating responsive sites.
* Looks, structure, and styles can be customized as per requirement.
* A simple and effective grid system.

**2.2.2 Flask**

Flask is an API of Python that allows us to build up web-applications. It was developed by Armin Ronacher. Flask’s framework is more explicit than Django’s framework and is also easier to learn because it has less base code to implement a simple web-Application. A Web-Application Framework or Web Framework is the collection of modules and libraries that helps the developer to write applications without writing the low-level codes such as protocols, thread management, etc. Flask is based on WSGI(Web Server Gateway Interface) toolkit and Jinja2 template engine.

**Features**

* Integrated support for unit testing.
* RESTful request dispatching.
* Uses a Ninja2 template engine.
* It is based on Werkzeug toolkit.
* Support for secure cookies (client-side sessions).
* Extensive documentation.
* Google app engine compatibility.
* APIs are nicely shaped and coherent
* Easily deployable in production

**Advantages**

* Higher compatibility with latest technologies
* Technical experimentation
* Easier to use for simple cases
* Codebase size is relatively smaller
* High scalability for simple applications,
* Easy to build a quick prototype
* Routing URL is easy
* Easy to develop and maintain applications
* Database integration is easy
* Small core and easily extensible
* Minimal yet powerful platform
* Lots of resources available online especially on GitHub

**2.2.3 Database: SQlite3**

SQLite is a lightweight, in-process library that implements a self-contained, serverless, zero-configuration, transactional SQL database engine. The code for SQLite is available in the public domain and thus it is free for use for any purpose, commercial or private.

Why SQlite?

* SQLite does not require a separate server process or system to operate
* (serverless).
* SQLite comes with zero-configuration, which means no setup or administration
* needed.
* A complete SQLite database is stored in a single cross-platform disk file.
* SQLite is very small and light weight, less than 400KiB fully configured or less than
* 250KiB with optional features omitted.
* SQLite is self-contained, which means no external dependencies.
* SQLite transactions are fully ACID-compliant, allowing safe access from multiple
* processes or threads.
* SQLite supports most of the query language features found in SQL92 (SQL2)
* standard.
* SQLite is written in ANSI-C and provides simple and easy-to-use API.
* SQLite is available on UNIX (Linux, Mac OS-X, Android, iOS) and Windows (Win32,
* WinCE, WinRT)

**Design**

* SQLite is an embedded SQL database engine
* SQLite does not have a separate server process like most other SQL databases.
* SQLite reads and writes directly to ordinary disk files.
* A single disk file stores the entire SQL database (multiple tables, indices, triggers, and views) as a single cross-platform file on a host machine.

**Features**

* Self-contained: no external dependencies.
* Written in ANSI-C.
* Zero-configuration - no setup or administration needed.
* A complete database is stored in a single cross-platform disk file.
* The database file format is cross-platform (Linux, Mac OS-X, Android, iOS and Windows) - you can freely copy a database between 32-bit and 64-bit systems or between big-endian and little-endian architectures.
* Great for use as an application file format.
* Available as a single ANSI-C source-code file that can be easily dropped into another project.
* Simple, easy to use API.
* Implements most of the SQL92 except some features.
* Transactions are ACID (atomic, consistent, isolated, and durable) compatible, even after system crashes and power failures.
* Comes with a standalone command-line interface (CLI) client that can be used to administer SQLite databases

**CHAPTER – 3**

**SYSTEM ANALYSIS**

**CHAPTER – 3**

**SYSTEM ANALYSIS**

**3.1 PROBLEM DEFINATION**

Problem in the existing system the present systems are inadequate in providing information and advices to the students and teachers. Often teachers are compelled to rely on local informational sources and existing way of sharing information. Through sharing a particular document on social media so on. There are some problems which are existing in my system those are given below concisely

**3.2 EXISTING SYSTEM**

In the present system a teacher has to approach various ways to send the files or resources to every student. Teacher have to be sure that everyone get the document. This often requires lots of time and effort. A student may not get the document. Some of the students may not use mobile or any how they are not able to get the document. It is tedious for a student and a teacher to receive and send the document between each other.

* All work is done manually
* In manual sharing system
* If the document in not sent to students, students need to ask repeated to teacher
* Difficulties to maintain the documents in local system
* They can’t have records of which document is sent or not
* Teachers don’t have a dedicated platform for sharing documents
* Only small number of students get the documents

**3.3 PROPOSED SYSTEM**

Our proposed project is an online learning called E – Learning and working process provides an effective solution for students and teachers to send and receive the documents, admin can manage and deleted the users in this application. Often student get confused based on the documents which teacher has send. First of all, teacher hardly find the solution to send the notes which reaches all of the students. Further comes many constraints about file format, file not opening in particular feature mobile of student and so on.

Our proposed system consists of a user registration and login module for new user to register and login to the E – learning system. The user may than view various documents which are available on the system. Users who have registers as the students can only view the data or documents which are uploaded by the teachers. When teachers can see all documents and upload the new one. The user can download the document as many times as they want. The teachers and upload documents as much as they want. The user can see all the document. The admin can view all the users in this system. The users may be students or teachers. Admin can delete user’s records. We have given all authority to the admin of controlling the whole application.

* To create a web-based application for our web learning
* To automate the process of learning
* To provide the online sharing of documents
* To provide the easy access of documents to students
* It becomes convenient for users to download the documents
* Saves time and confusion
* Provides a customized view of the interface
* Help in reducing the hard document work
* Database is maintaining so properly so that managing the records is very easy
* E – Learning system

**3.4 SYSTEM MODULE**

**1. LOGIN**

At first user need to create an account then the user can login into the system by using username and password

**2. VIEW MODULE**

The user views the document on the screen, the user interface is created by keeping in mind that user would not find any type of difficulties to use the application

**3. UPLOAD MODULE**

Teacher should login into the application to upload any document. To upload the document the teachers should select the file which needs to be uploaded, the file is upload into a folder which is coded to the destination. When teacher wants to find the documents that are uploaded, teacher should tap on the button of show documents it will display all document which are uploaded in our applications.

**4. DOWNLOAD MODULE**

Student should login into the application to download any document. To download the document the student should select the file which needs to be downloaded, the file is uploaded into a folder which is coded as the destination. When student wants to find the documents that are uploaded should tap on the button of show documents it will display all document which are uploaded in our application, from that list student can download the document into the system

**5. SEARCH MODULE**

This module is cannot be seen in the front end because when the user search for the document by clicking show documents this module come into work, where the code is written to search for a specific document from the folder in which the documents are stored. So, this module helps to get the document from the folder

**6. LOGOUT**

Logging out helps to protect the current customers access or prevent unauthorized actions on the current login session.

**3.5 FEASIBILITY STUDY**

The feasibility of the project is analysed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed systems are not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential. Three key considerations involved in feasibility analysis are:

**3.5.1 Economic Feasibility**

This study is carried out to check the economic impact will have on the system will have on the organization. The amount of fund that the company can pour into the research and development of system is limited. The expenditures must be justified.

Thus, the developed system as well within the budget and this wasachieved because most of the technologies used are freely available. Only the customised products have to be purchased.

**3.5.2 Technical Feasibility**

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. Any system developed must not have a high demand on the available technical resources. This will lead to high demands being placed on the client. The developed system must have a modest requirement, as only minimal or null changes for the implementing this system.

**3.5.3 Operational Feasibility**

 The aspect of study is to check the level of acceptance of the system by the user. This includes the process of training the user to use the system efficiently. The user must not feel threatened by the system, instead must accept it as a necessity. The level of acceptance by the users solely depends on the methods that are employed to educate the user about the system and to make him familiar with it. His level of confidence must be raised so that he is also able to make some constructive criticism, which is welcomed, as he is the final user of the system.

**CHAPTER – 4**

**SYSTEM REQUIREMENT**

**4.1 HARDWARE REQUIREMENTS**

The most common set of requirements defined by any operating system or software application is the physical computer resources, also known as hardware.

HARDWARE REQUIREMENTS FOR PRESENT PROJECT:

Hard Disk: 40GB.

Ram: 256MB.

Processor: Pentium IV.

Processor Speed: 1.5GHz.

**4.2 SOFTWARE REQUIREMENTS**

Software Requirements deal with defining software resource requirements that need to be installed on a computer to provide optimal functioning of an application. These requirements are generally not included in the software installation package and need to be installed separately before the software is installed.

SOFTWARE REQUIREMENTS FOR PRESENT PROJECT:

Language: PYTHON

UI Technologies: Bootstrap, CSS3, HTML5, and FLASK.

Database: SQLITE3

**4.3 FUNCTIONAL REQUIREMENTS**

The functional requirement is **describing the behavior of the system** as it relates to the system's functionality.

ADMIN:

1. Admin can login with his username and password
2. All the activities are available in admin panel.
3. List of students and teachers can be viewed in admin panel

**4.4 NON-FUNCTIONAL REQUIREMENTS:**

The non-functional requirement **elaborates a performance characteristic** of the system.

**4.4.1 Reliability:** The system will consistently perform its intended function for e.g. The important information must be validated.

**4.4.2 Efficiency:** Unnecessary data will not be transmitted on the network and database server will be properly connected.

**4.4.3 Reusability:** The system can be reused in any organization or site of the same group, by defining the organization master definition under software license agreement.

**4.4.4 Integrity:** Only System Administrator has rights to access the database, not every user can access all the information. Each user will be having rights to access the modules.

**CHAPTER – 5**

**SYSTEM DESIGN**

**DEFINITION**:

The most creative and challenging face of the system development is System Design. It provides the understanding and procedural details necessary for the logical and physical stages of development. In designing a new system, the system analyst must have a clear understanding of the objectives, which the design is aiming to fulfill. The first step is to determine how the output is to be produced and in what format. Second, input data have to be designed to meet the requirements of the proposed output. The operational phases are handled through program construction and testing.

**5.1 System Architecture**

System architecture is the conceptual model that defines the structure, behavior, and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviors of the system. A system architecture can consist of system components and the sub-systems developed, that will work together to implement the overall system.

**UML DIAGRAMS**

The Unified Modeling Language (UML) is a standard language for specifying, visualizing, constructing, and documenting the software system and its components. It is a graphical language, which provides a vocabulary and set of rules. The UML focuses on the conceptual and physical representation of the system. It captures the decisions and understandings about systems that must be constructed. It is used to understand, design, configure, maintain, and control information about the systems

**5.2 DATAFLOW DIAGRAM**

The DFD takes an input-process-output view of a system i.e., data objects flow into the software, are transformed by processing elements, and resultant data objects flow out of the software. Data objects represented by labeled arrows and transformation are represented by circles also called as bubbles.

**Level 0 DFD**

A context diagram is a top level (also known as level 0) data flow diagram. It only contains one process node that generalizes the function of the entire system in relationship to external entities. In level 0 DFD, system is shown as one process.

The level 0 DFD shows how the system is divided into sub-system(processes), each of which deals with one or more of the data flows to or from an external agent, and which together provide all the functionality of the system as a whole. It also identifies internal data stores that must be present in order for the system to do its job and shows the flow of data between the various parts of the system

**Add documents**

**Insert all details**

**Download documents/Chat**

**Upload / Download**

**ADMIN**

**TEACHER**

**STUDENT**

**DOCUMENTS**

**LEVEL – 0**

**E - LEARNING**

**Level – 1 E – Learning**

Username and Password

Admin User & password

Registration

Login

Admin

Register

Main Page

Database

Upload / Download

**Get username and password**

**Wrong password notification**

**Specified admin username and pass**

**Register into the E - Learning**

**Register before login**

**Store in database**

**Upload Documents**

**5.3 ACTIVITY DIAGRAM**

Activity diagrams represent workflows in a graphical way. They can be used to describe the business workflow or the operational workflow of any component in a system. Sometimes activity diagrams are used as an alternative to State machine diagrams

The Activity Diagram highlights the activities. Each activity is represented by a rounded rectangle-narrower and more oval-shaped than the state icon. An arrow represents the transition from the one activity to the next. The activity diagram has a starting point represented by filled-in circle.

Login

Documents

Admin

Student

Teacher

View/ delete Students

View/ delete Teachers

View Documents

View Documents

Download Documents

View Documents

Upload Documents

Upload Documents

Download Documents

**Start**

Logout

**5.4 SEQUENCE DIAGRAMS**

Sequence diagrams in UML show how objects interact with each other and the order those interactions occur. It’s important to note that they show the interactions for a particular scenario. The processes are represented vertically and interactions are shown as arrows.

ADMIN

STUDENT

TEACHER

DOCUMENTS

1. View Students

2. View Teachers

3. Delete Teachers

4. View Documents

5. Delete Students

6. Download

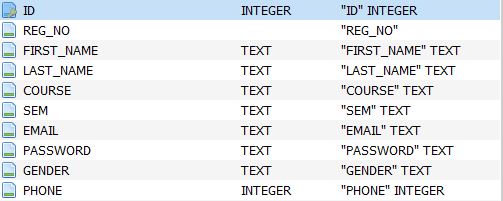
7. View Doc

8. Download Doc

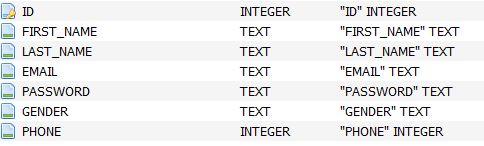
9. View Doc

10. Download Documents

**5.5 CLASS DIAGRAM**

A Class is a category or group of things that has similar attributes and common behavior. A Rectangle is the icon that represents the class it is divided into three areas. The upper most area contains the name, the middle; area contains the attributes and the lowest areas show the operations. Class diagrams provides the representation that developers work from

**Student Registration Table**



**Teacher Registration Table**



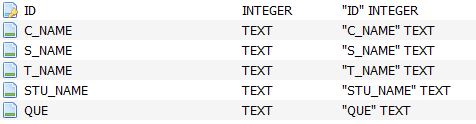
**Course Table**



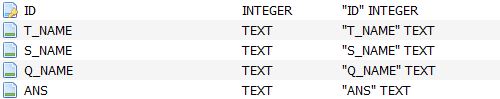
**Semester Table**



**Subject Table**



**Questions Table**



**Answers Table**

**5.6 E-R DIAGRAM**

An Entity Relationship Diagram (ERD) is a visual representation of different entities within a system and how they relate to each other. For example, the elements writer, novel, and a consumer may be described using ER diagrams the following way:

`

**Entity**

* An entity can be a person, place, event, or object that is relevant to a given system.
* For example, a school system may include students, teachers, major courses, subjects, fees, and other items. Entities are represented in ER diagrams by a rectangle and named using singular nouns.

**Attribute**

* An attribute is a property, trait, or characteristic of an entity, relationship, or another attribute.
* For example, the attribute “customer address” can have the attributes number, street, city, and state. These are called composite attributes

**Relationship**

A relationship describes how entities interact. For example, the entity “Carpenter” may be related to the entity “table” by the relationship “builds” or “makes”. Relationships are represented by diamond shapes and are labeled using verbs.

**E – R Diagram for User**

User

View Doc

Upload Doc

Download Doc

**E –R DIAGRAM for Admin**

Admin

Delete Students

Delete Teachers

Delete Documents

View Students

View Documents

View Teachers

**5.7USE CASE DIAGRAM**

Use case diagram is a behavioral UML Diagrams and frequently used to analyze various systems. They enable you to visualize the different types of roles in a system and how those roles interact with the system.

**Actor**

Actor in a use case diagram is any entity that performs a role in one given System. This could be a person, organization or an external system.it is usually drawn like skeleton shown below



**Use Case**

A use case represents a function or an action within the system. It’s drawn as an oval and named with the function.

**USE CASE DIAGRAM**

View Document

Upload Document

Download Document

Admin **Use Case Diagram:**

View Teachers

View Document

View Students

Delete Document

Delete Students

Delete Teachers

**CHAPTER – 6**

**IMPLEMENTATION**

The goals of the implementation phase is to translate the design of the system produce during the phase, into coded form in a given programming language, which can then be executed by a computer performing the computation specified by the design the coding phase affects both testing and maintenance profoundly. Well written code can reduce the testing and maintains cost.

A crucial phase in the system lifecycle is the successful implementation of the system design. Implementation simply means converting the system designs into operation. Implementation is the process of bringing the developed system into operational use and providing it to the user.

This stage is considered to be most crucial stage in the development of a successful system since a new system is developed and the users are getting information in effective manner

Implementation is a stage in which the design is converted into working system that is it is the stage of the project where theoretical design is turned into a working system. The implementation involves careful planning, investing of the current system and its constraint on implementation, design of methods to achieve the changeover.

The Project is implemented in different phases as follows

* First phase includes table design for database module.
* Second phase includes coding for modules.
* Third phase includes the integration of modules.
* Fourth phase includes connection establishment between the front end and back end.
* Fifth phase includes error handling and message generator.

The coding was done with the following characteristics in mind

* Code efficiency
* Memory efficiency
* Response time
* Security
* Maintainability
* Efficient and consistent

**Main file of this project – app.py**

**from flask import Flask, render\_template, request, redirect, flash, url\_for, send\_file, session**

**import sqlite3**

**import os**

**from werkzeug.utils import secure\_filename**

**app = Flask(\_\_name\_\_, template\_folder='templates')**

**app.secret\_key = "hello"**

**app.config['UPLOAD\_FOLDER'] = "static//upload//"**

**path\_of\_file = 'G:/Haroon sir institute/E Learning/E-Learning-Flask/static/upload'**

**conn = sqlite3.connect('elearning.db', check\_same\_thread=False)**

**c = conn.cursor()**

**c.execute("CREATE TABLE IF NOT EXISTS ss\_registration (ID INTEGER PRIMARY KEY AUTOINCREMENT,REG\_NO TEXT, FIRST\_NAME TEXT, LAST\_NAME TEXT, COURSE TEXT,SEM TEXT, EMAIL TEXT,PASSWORD TEXT, GENDER TEXT, PHONE INTEGER)")**

**c.execute("CREATE TABLE IF NOT EXISTS tregistration (ID INTEGER PRIMARY KEY AUTOINCREMENT,REG\_NO TEXT, FIRST\_NAME TEXT, LAST\_NAME TEXT, EMAIL TEXT,PASSWORD TEXT, GENDER TEXT, PHONE INTEGER)")**

**c.execute("CREATE TABLE IF NOT EXISTS course (ID INTEGER PRIMARY KEY AUTOINCREMENT, COURSE\_NAME TEXT)")**

**c.execute("CREATE TABLE IF NOT EXISTS subject (ID INTEGER PRIMARY KEY AUTOINCREMENT, SUB\_NAME TEXT, SEM TEXT)")**

**c.execute("CREATE TABLE IF NOT EXISTS questionss (ID INTEGER PRIMARY KEY AUTOINCREMENT, C\_NAME TEXT, S\_NAME TEXT,T\_NAME TEXT,STU\_NAME TEXT,QUE TEXT)")**

**c.execute("CREATE TABLE IF NOT EXISTS answers (ID INTEGER PRIMARY KEY AUTOINCREMENT, T\_NAME TEXT, S\_NAME TEXT, Q\_NAME TEXT,ANS TEXT)")**

**@app.route("/")**

**def index():**

**return render\_template('index.html')**

**@app.route("/options")**

**def options():**

**return render\_template('options.html')**

**@app.route("/studentregistration", methods = ["GET", "POST"])**

**def studentregistration():**

**if request.method == "POST":**

**reg\_no = request.form.get('reg\_no')**

**first\_name = request.form.get('first\_name')**

**last\_name = request.form.get('last\_name')**

**course = request.form.get('course')**

**semester = request.form.get('sem')**

**email = request.form.get('email')**

**s\_pass = request.form.get('s\_pass')**

**gender = request.form.get('gender')**

**phone = request.form.get('phone')**

**#print(first\_name)**

**#print(first\_name, last\_name, email, s\_pass, gender, phone)**

**print(course)**

**c.execute("INSERT INTO ss\_registration(REG\_NO,FIRST\_NAME, LAST\_NAME,COURSE,SEM, EMAIL, PASSWORD, GENDER, PHONE) VALUES(?,?,?,?,?,?,?,?,?)",(reg\_no,first\_name, last\_name,course,semester, email, s\_pass, gender, phone))**

**conn.commit()**

**flash("Registered successfully...!")**

**return render\_template('studentlogin.html')**

**c.execute("SELECT \* FROM course")**

**rows = c.fetchall()**

**c.execute("SELECT \* FROM semester")**

**s\_rows = c.fetchall()**

**return render\_template('studentregistration.html', rows=rows, s\_rows=s\_rows)**

**@app.route("/studentlogin", methods = ["GET", "POST"])**

**def studentlogin():**

**if request.method == "POST":**

**email = request.form.get('email')**

**session["student\_user"] = email**

**s\_pass = request.form.get('s\_pass')**

**conn = sqlite3.connect('elearning.db', check\_same\_thread=False)**

**c = conn.cursor()**

**statement = f"SELECT \* FROM ss\_registration WHERE EMAIL='{email}' AND PASSWORD='{s\_pass}'"**

**c.execute(statement)**

**if not c.fetchone():**

**record = c.fetchone()**

**session["name"] = record**

**flash("Username/Password incorrect...!")**

**return render\_template('studentlogin.html')**

**else:**

**flash("Login Successfully...!")**

**return render\_template('studenthome.html')**

**return render\_template('studentlogin.html')**

**@app.route("/chat", methods = ["GET", "POST"])**

**def chat():**

**return render\_template("chat.html")**

**@app.route("/addcourse", methods = ["GET", "POST"])**

**def addcourse():**

**if request.method == "POST":**

**course = request.form.get('course')**

**statement = f"INSERT INTO course(COURSE\_NAME) VALUES('{course}')"**

**c.execute(statement)**

**conn.commit()**

**return redirect(url\_for('adminhome'))**

**return render\_template("addcourse.html")**

**@app.route("/showcourse")**

**def showcourse():**

**c.execute("SELECT \* FROM course")**

**rows = c.fetchall()**

**return render\_template('showcourse.html', rows=rows)**

**@app.route("/deletecourse/<string:record\_id>", methods = ["POST", "GET"])**

**def deletecourse(record\_id):**

**try:**

**c.execute("DELETE FROM course WHERE ID=?",(record\_id))**

**conn.commit()**

**flash("Record Deleted Successfully", "success")**

**except:**

**flash("Record Delete Failed", "danger")**

**finally:**

**return redirect(url\_for('showcourse'))**

**@app.route("/addsubject", methods = ["GET", "POST"])**

**def addsubject():**

**if request.method == "POST":**

**subject = request.form.get('subject')**

**sem = request.form.get('sem')**

**c.execute("INSERT INTO subject(SUB\_NAME, SEM) VALUES(?,?)", (subject, sem))**

**conn.commit()**

**return redirect(url\_for('adminhome'))**

**return render\_template("addsubject.html")**

**@app.route("/showsubject")**

**def showsubject():**

**c.execute("SELECT \* FROM subject")**

**rows = c.fetchall()**

**return render\_template('showsubject.html', rows=rows)**

**@app.route("/teacherregistration", methods = ["GET", "POST"])**

**def teacherregistration():**

**if request.method == "POST":**

**reg\_no = request.form.get('reg\_no')**

**first\_name = request.form.get('first\_name')**

**last\_name = request.form.get('last\_name')**

**email = request.form.get('email')**

**s\_pass = request.form.get('s\_pass')**

**gender = request.form.get('gender')**

**phone = request.form.get('phone')**

**#print(first\_name)**

**#print(first\_name, last\_name, email, s\_pass, gender, phone)**

**c.execute("INSERT INTO tregistration(REG\_NO,FIRST\_NAME, LAST\_NAME, EMAIL, PASSWORD, GENDER, PHONE) VALUES(?,?,?,?,?,?,?)",(reg\_no,first\_name, last\_name, email, s\_pass, gender, phone))**

**conn.commit()**

**flash("Registered successfully...!")**

**return render\_template('teacherregistration.html')**

**@app.route("/teacherlogin", methods = ["GET", "POST"])**

**def teacherlogin():**

**if request.method == "POST":**

**t\_email = request.form.get('email')**

**session["teacher\_email"] = t\_email**

**s\_pass = request.form.get('s\_pass')**

**conn = sqlite3.connect('elearning.db', check\_same\_thread=False)**

**c = conn.cursor()**

**statement = f"SELECT \* FROM tregistration WHERE EMAIL='{t\_email}' AND PASSWORD='{s\_pass}'"**

**c.execute(statement)**

**if not c.fetchone():**

**flash("Username/Password incorrect...!")**

**return render\_template('teacherlogin.html')**

**else:**

**record = c.fetchone()**

**flash("Login Successfully...!")**

**return render\_template('teacherhome.html', record=record)**

**return render\_template('teacherlogin.html')**

**@app.route("/adminlogin", methods = ["GET", "POST"])**

**def adminlogin():**

**if request.method == "POST":**

**u\_name = request.form.get('user\_name')**

**session["admin\_user"] = u\_name**

**p\_word = request.form.get('s\_pass')**

**admin = 'admin'**

**password = 'admin123'**

**@app.route("/libraryt")**

**def libraryt():**

**files = os.listdir(app.config["UPLOAD\_FOLDER"])**

**return render\_template("libraryt.html", files=files)**

**@app.route("/allqs")**

**def allqs():**

**c.execute("SELECT \* FROM answers")**

**conn.commit()**

**qdata = c.fetchall()**

**return render\_template("allquestionanswers.html", qdata = qdata)**

**if \_\_name\_\_ == "\_\_main\_\_":**

**app.run(debug=True)**

**CHAPTER – 7**

**SYSTEM TESTING**

**7.1 PURPOSE OF TESTING**

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components. Testing is a crucial element of software quality assurance and presents ultimate review of specification, design and coding. System Testing is an important phase. Testing represents an interesting anomaly for the software.  Thus, a series of testing are performed for the proposed system before the system is ready for user acceptance testing.

In other words, software testing is a verification and validation process.

**Verification**

Verification is the process to make sure the product satisfies the conditions imposed at the start of the development phase. In other words, to make sure the product behaves the way we want it to.

**Validation**

Validation is the process to make sure the product satisfies the specified requirements at the end of the development phase. In other words, to make sure the product is built as per customer requirements.

**7.2 TYPES OF TESTING:**

**Black box Testing**

Black box testing is a testing technique that ignores the internal mechanism of the system and focuses on the output generated against any input and execution of the system. It is also called functional testing.

**White box Testing**

White box testing is a testing technique that tests the internal mechanism of a system. It is also called structural testing, Open Box testing, transparent Box testing and glass box testing.

Black box testing is often used for validation and white box testing is often used for verification.

**7.3 LEVELS OF TESTING:**

* Unit Testing
* Integration Testing
* Functional Testing
* System Testing
* Stress Testing
* Performance Testing
* Usability Testing
* Acceptance Testing
* Regression Testing
* Beta Testing

**Unit Testing**

**Unit testing** is a level of software testing where individual units/ components of software are tested. The purpose is to validate that each unit of the software performs as designed. A unit is the smallest testable part of any software. It usually has one or a few inputs and usually a single output. It falls under the class of white box testing. It is often done by the programmer to test that the unit he/she has implemented is producing expected output against given input.

**Integration Testing**

**Integration testing** is a level of software testing where individual units are combined and tested as a group. The purpose of this level of testing is to expose faults in the interaction between integrated units. Also, the interaction between software and hardware is tested in integration testing, if software and hardware components have any relation. It may fall under both white box testing and black box testing.

**Functional Testing**

Functional Testing is defined as a type of testing which verifies that each function of the software application operates in conformance with the requirement specification. This testing mainly involves black box testing and it is not concerned about the source code of the application.

Each and every functionality of the system is tested by providing appropriate input, verifying the output and comparing the actual results with the expected results.

**System Testing**

System Testing is the testing of a complete and fully integrated software product. System testing is the testing to ensure that by putting the software in different environments (e.g., Operating Systems) it still works. System testing is done with full system implementation and environment. It falls under the class of black box testing.

**Stress Testing**

Stress Testing is defined as a type of Software Testing that verified the stability & reliability of the system. This test mainly determines the system on its robustness and error handling under extremely heavy load conditions.

It even tests beyond the normal operating point and evaluates how the system works under those extreme conditions. Stress Testing is done to make sure that the system would not crash under crunch situations.

**Performance Testing**

Performance Testing is defined as a type of software testing to ensure software applications will perform well under their expected workload. A software application's performance like its response time, reliability, resource usage and scalability do matter. The goal of Performance Testing is not to find bugs but to eliminate it.

The focus of Performance Testing is checking a software program's

* Speed - Determines whether the application responds quickly
* Scalability - Determines maximum user load the software application can handle.
* Stability - Determines if the application is stable under varying loads

**Usability Testing**

Usability Testing is defined as a type of software testing where, a small set of target end-users, of a software system, "use" it to expose usability defects. This testing mainly focuses on the user's ease to use the application, flexibility in handling controls and the ability of the system to meet its objectives.

**Acceptance Testing:**

User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system meets the functional requirements

**Regression Testing**

Regression Testing is defined as a type of software testing to confirm that a recent program or code change has not adversely affected existing features.

Regression Testing is nothing but a full or partial selection of already executed test cases which are re-executed to ensure existing functionalities work fine.

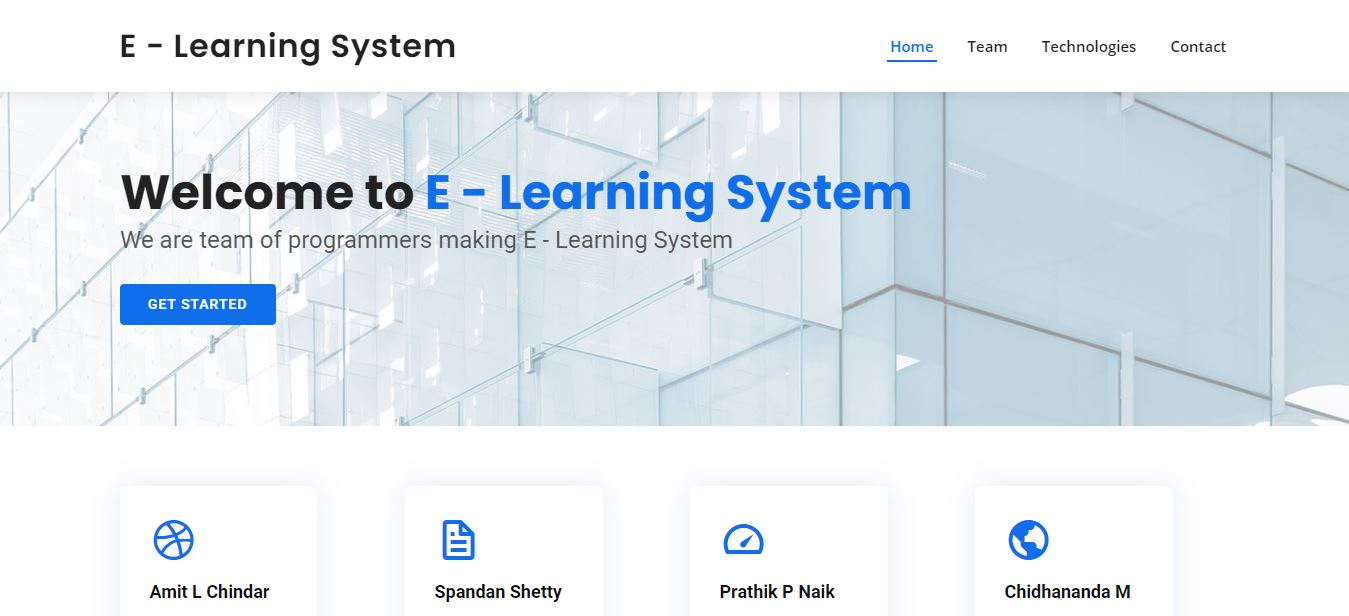
**Beta Testing**

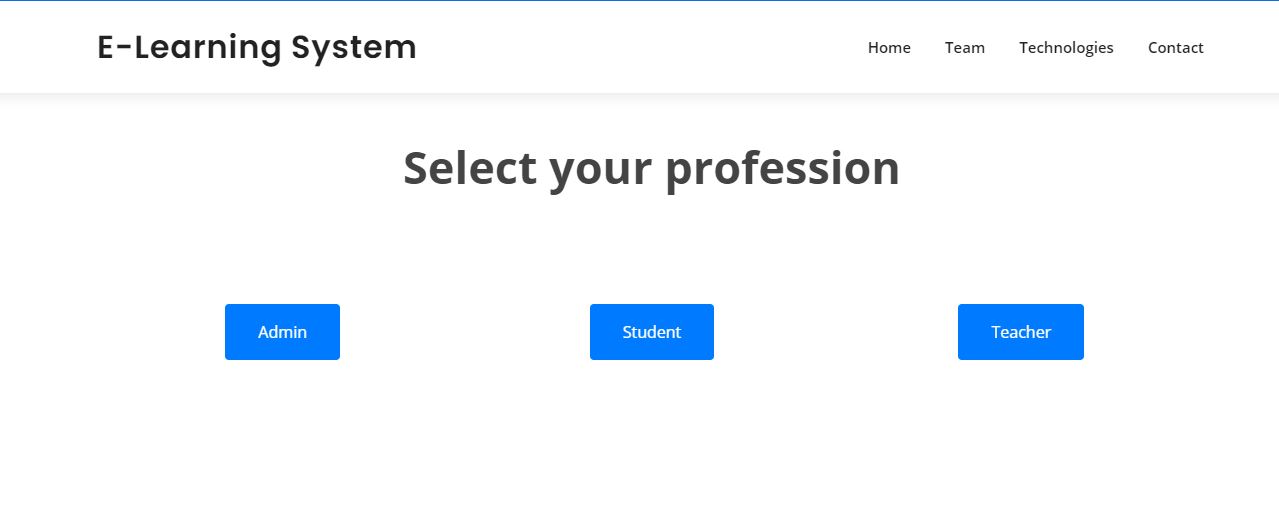
Beta Testing of a product is performed by "real users" of the software application in a real environment and can be considered as a form of external [User Acceptance Testing](https://www.guru99.com/user-acceptance-testing.html).

Beta version of the software is released to a limited number of end-users of the product to obtain feedback on the product quality. Beta testing reduces product failure risks and provides increased quality of the product through customer validation.

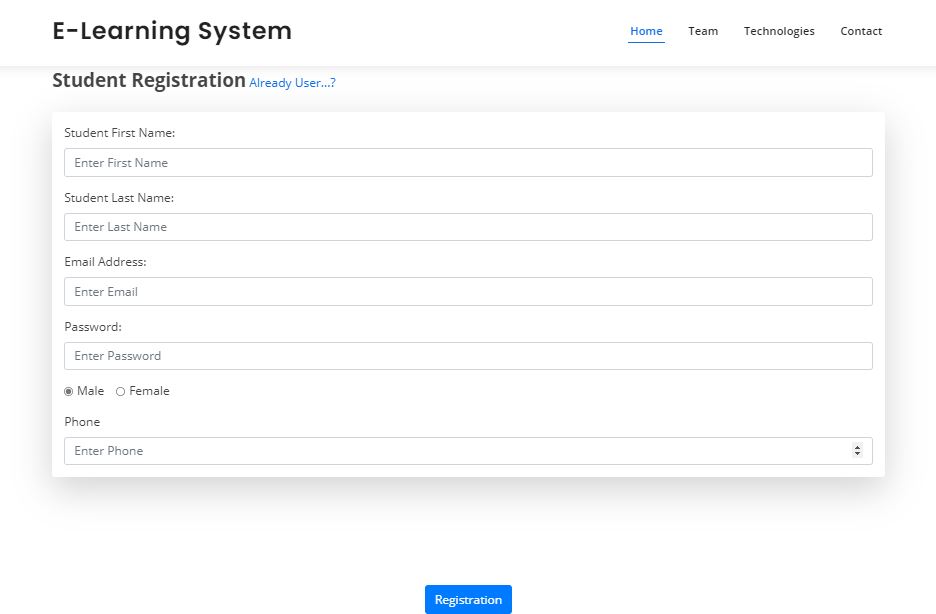
**CHAPTER – 8**

**SNAPSHOTS**

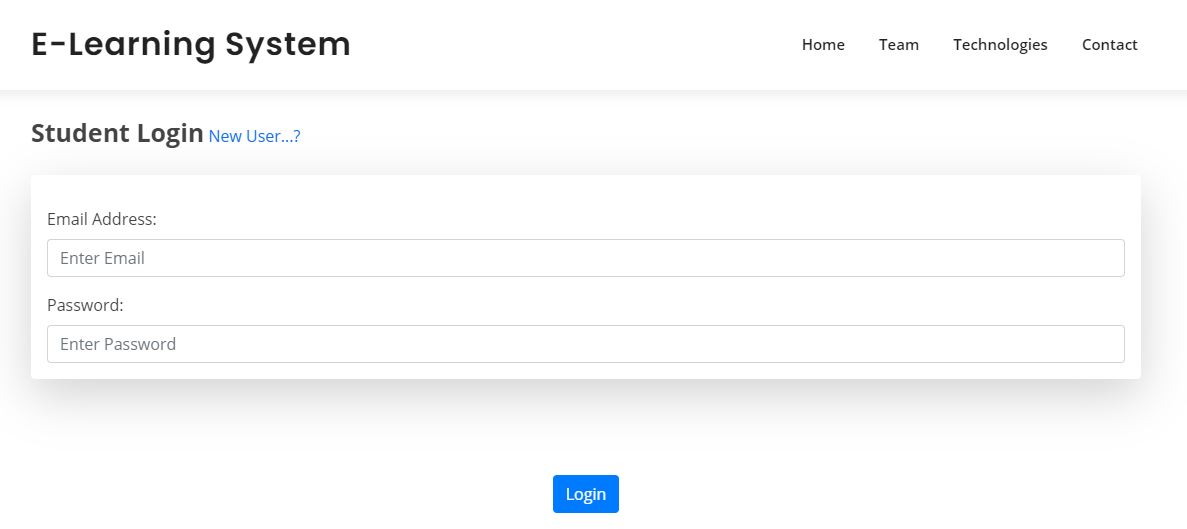


**Home Page**

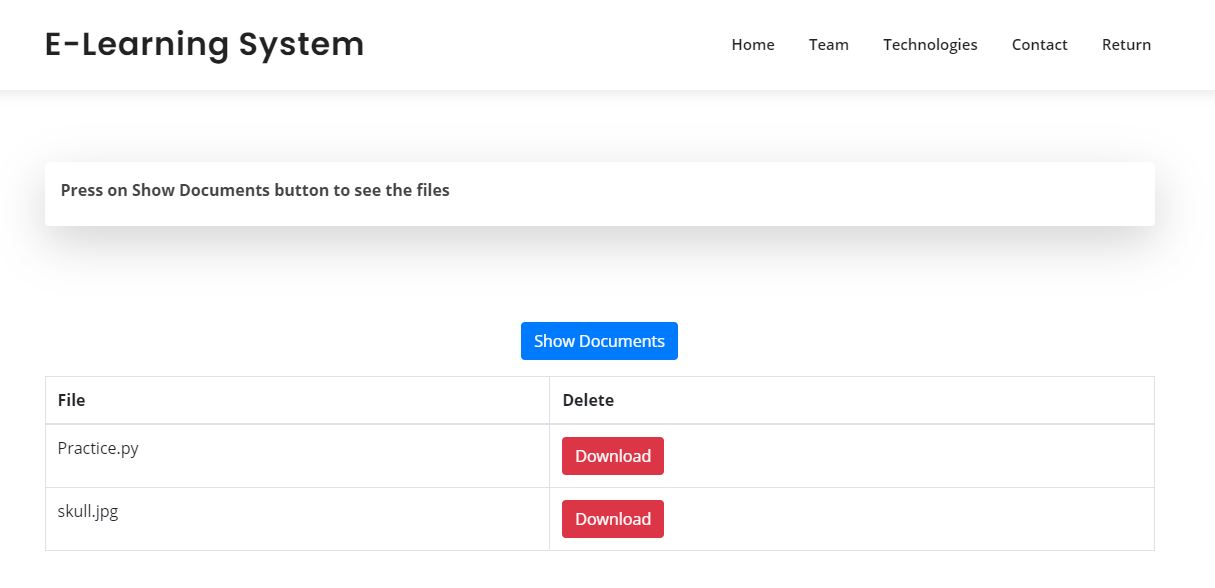
**Options Page**

****

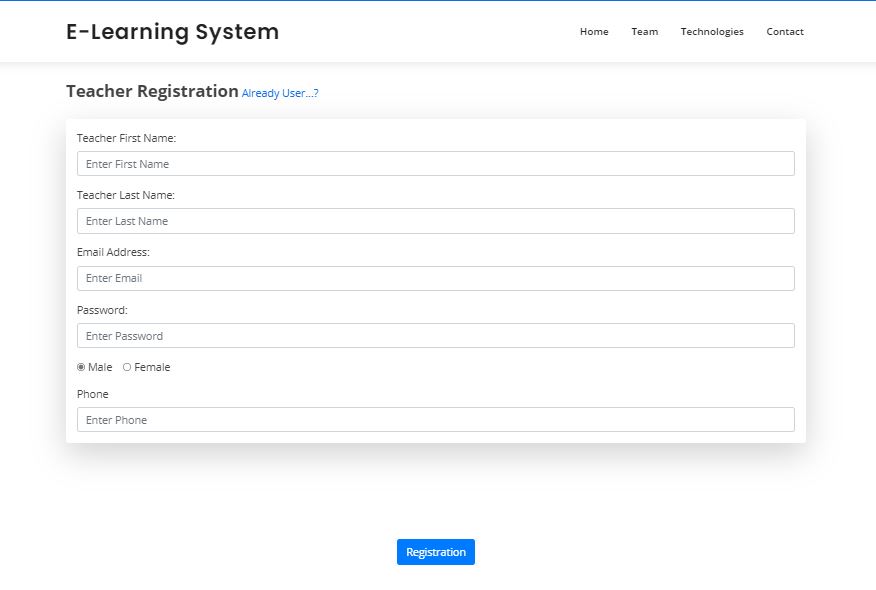
**Student Registration**

****

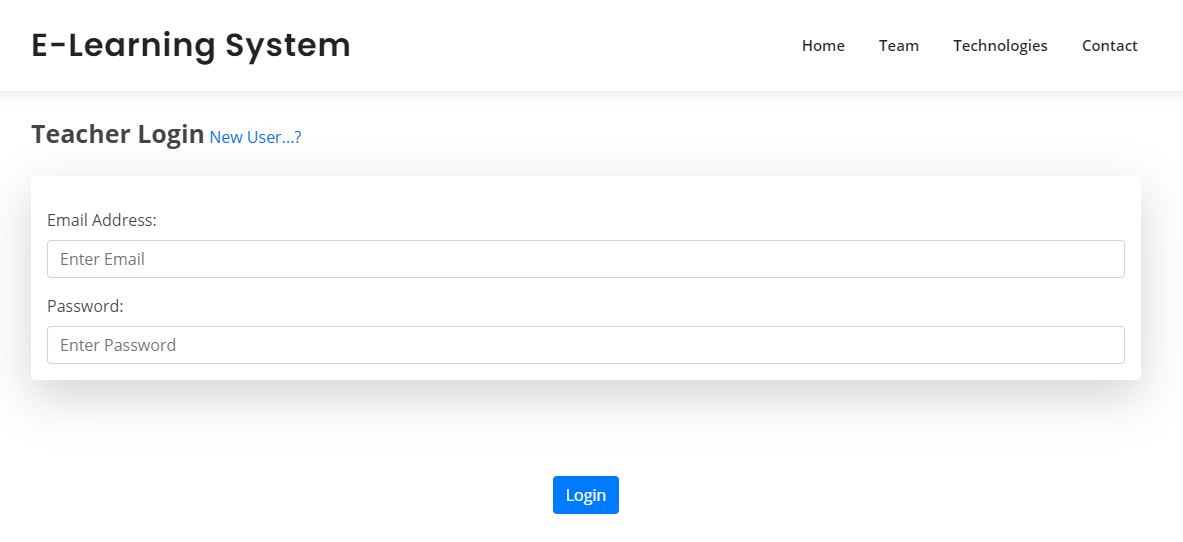
**Student Login**

****

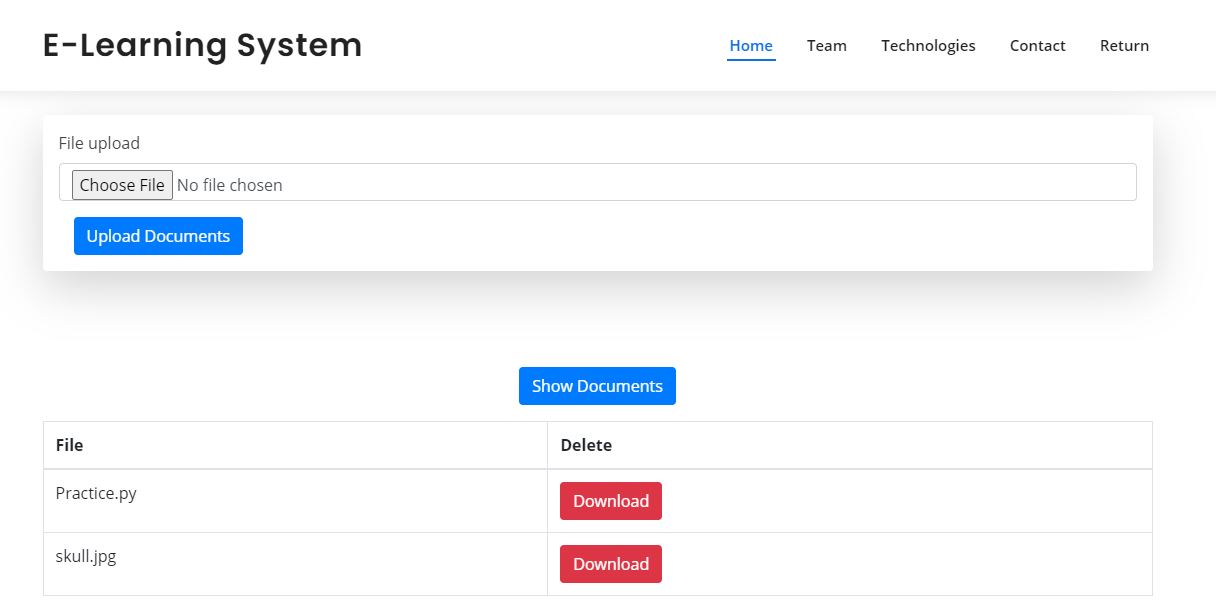
**Download Document Page**

****

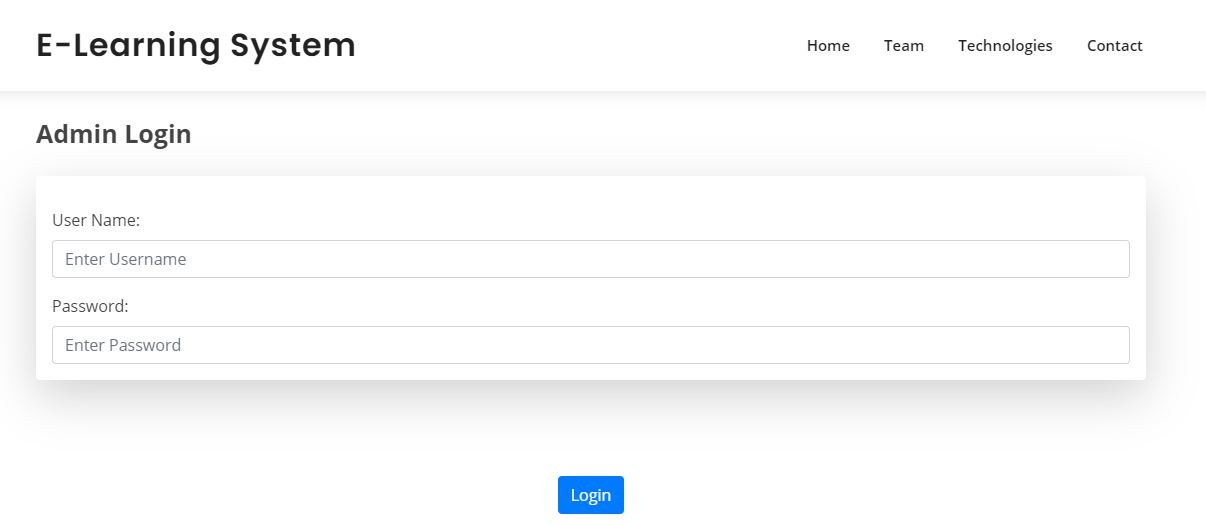
**Teacher Registration**

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**Teacher Login**

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**Upload Document Page**

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**Admin Login**

**CONCLUSION**

**Conclusion**

The E – Learning web application is developed to solve a specific problem which is in the educational organizations. It can be concluded that this web application is able to provide the good interface to teachers and students to see and download the documents which are uploaded by the teachers in this application. The main aim of this project is to make this project for specific organisation. Because in particular organisation, many faculties are wish to send the notes and document but at the same time they don’t want to share that document which any other organisation. So, this project will help those faculties at this point where there can share the documents within the organisation. Finally, the goal of this web application is to make an efficient system which is effective in terms of cost and time. The E-Learning web application is developed to maintain the documents of the teachers which are created by the specific teacher in the organization.

**CHAPTER – 10**

**FUTURE ENHANCEMENT**

**Further Enhancement**

* We need to organize this application for all organisations
* Update a feature where faculties can conduct online quiz for students
* We need to add feature to view the document and then download
* Saving all the documents on server rather than in a folder
* This E – learning can be implemented in the real-world level
* To make this E – learning project more profitable by adding subscriptions to get documents
* To update quiz which can be run online where students can get the online test in this application.
* To improve this project with more security for every user’s data
* To implement this application hybrid when can run on any mobile device
* To implement this application at the higher level in every organization.

**CHAPTER – 11**

**BIBLIOGRAPHY**

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* [**https://www.w3schools.com/bootstrap/**](https://www.w3schools.com/bootstrap/)
* [**https://www.mysql.com/**](https://www.mysql.com/)